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Athletic administrative functions concerning the physical plant of the academic institution

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Abstract

ATHLETIC ADMINISTRATIVE FUNCTIONS CONCERNING THE PHYSICAL PLANT OF THE ACADEMIC INSTITUTION

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The purpose of this project is to present to the reader administrative considerations concerning the procedures necessary for an academic institution to successfully complete the appropriate educational facilities that will aid in the overall educational process of the student.

Estimates of that portion of the total school or college plant devoted to health and athletic programs range as high as 50% to 75%. (Bookwalter, K. W. 1984, p. 17). This large investment of money, time, and personnel requires considerable thought and planning. Athletic education facilities should reflect the program in action. Furthermore, administrators, teachers, and other personnel in these special areas

should participate in this planning, and, as such, they need to be knowledgeable about facilities and the various procedures for developing a healthful and efficient school plant. They need to know the needs of the programs involved, the latest trends in facilities, the common errors that are made, how they can work most effectively with the architect, and health features that should be considered.

The information in this text concludes that in order for facilities of any academic institution to meet the physical needs of its students, there must exist administrative awareness that is sensitive to the overall educational process.

ATHLETIC ADMINISTRATIVE FUNCTIONS
CONCERNING THE PHYSICAL PLANT
OF THE ACADEMIC INSTITUTION

Page No.

I. BASIC CONSIDERATIONS IN PLANNING 1

A. Facilities emanate as a result of program needs.....1
B. Cooperative planning.....1
C. Healthful environment for students.....1

1. Physiological needs.....1
2. Protection against accidents.....2
3. Protection against disease.....2
4. Healthful psychological environment....2

D. Guides for planning, construction, and utilization of facilities.....2

1. Validity.....2
2. Utility.....3
3. Accessibility.....3
4. Isolation.....3
5. Departmentalization.....3
6. Safety, hygiene, and sanitation.....3
7. Supervision.....4
8. Durability and maintenance.....4
9. Beauty.....4
10. Flexibility and Expansibility.....4
11. Economy.....5

E. Summary of Important Guidelines and Principles for Facility Planning.....5

II. COMMON ERRORS OF ATHLETIC PERSONNEL IN FACILITY MANAGEMENT.....10

III. THE PLANNING TEAM.....11

A. Working with the architect.....12
B. Educational specifications.....16
C. Meeting with the architect.....17
D. Final processing.....21

Page No.

IV. GENERAL TRENDS IN FACILITY CONSTRUCTION.....21

V. NEW FEATURES IN THE CONSTRUCTION OF PHYSICAL EDUCATION FACILITIES.....26

A. Park School Facilities.....32
B. Indoor facilities.....35
C. Health service facilities.....55
D. Outdoor facilities.....61

1. Elementary School.....63
2. Junior High School.....65
3. Senior High School.....67

VI. CONCLUSION/SUMMARY.....73

VII. REFERENCES.....75

VIII. EXHIBIT ILLUSTRATIONS

A. Ground Floor Plan.....A
B. Main Floor Plan.....B
C. Basement Plan.....C
D. Checklist for Facility Planners.....D

I. BASIC CONSIDERATIONS IN PLANNING

At the outset, two principles should be very much in the minds of athletic educators in relation to facility management: (A) facilities emanate as a result of program needs; and, (B) cooperative planning is essential to avoid common mistakes. The objectives, activities, teaching methods and materials, administrative policies, and equipment and supplies represent program considerations regarding facilities. The educational and recreational needs of both the school and community, the thinking of both school administrators and athletic educators, along with the advice of both architects and lay persons are other considerations if facilities are to be planned wisely. (Architectural Research Group, 1981).

Another set of principles basic to facility planning relate particularly to the optimum promotion of a (C) healthful environment for the athletes and students. Included in this set of principles is the; provision for facilities that take into account (1) physiologic needs of the athlete including proper temperature control, lighting, water supply, and noise

level. A second principle would be the provision of facilities that take into account (2) protection against accidents. The facilities should be planned so that the danger of fire, the possibility of mechanical accidents, and the hazards involved in student traffic would be eliminated or kept to a minimum. A third principle would concern itself with (3) protection against disease. This would mean attention to such items as proper sewage disposal, sanitation procedures, and water supply. Finally, a fourth principle is the need to provide (4) a healthful psychological environment. This would have implications for space, location of activities, color schemes, and elimination of distractions through such means as soundproof construction. (DeWeese, A. D. and Moore, V. M., 1974).

A third set of principles has been developed by Bookwalter (1984). These may be used as (D) guides for the planning, construction, and utilization of facilities for school health and athletic programs:

1. Validity - Standards for space, structure, and fixtures must be compatible with the rules essential for the effective conduct of the program.

According to the New York State Department of Education, the number of teaching stations needed for a school will depend upon school enrollment, athletic education class size, periods of athletic education scheduled each week for a teaching station, the number of periods of athletic education each week for which a pupil is scheduled, activities offered, and pupils in out-of-class programs.

2. Utility - Facilities should be adaptable for different activities and programs without affecting such items as safety and effective instruction.

3. Accessibility - Facilities should be readily and directly accessible for the individuals who will be using them.

4. Isolation - Facilities should be planned so as to reduce to a minimum distractions, offensive odors, noise, and undesirable activities and groups.

5. Departmentalization - Functionally related services and activity areas should be continuous or adjacent for greatest economy and efficiency.

6. Safety, hygiene, and sanitation - The maintenance of proper health standards should be a

major consideration in all facility planning.

7. Supervision - Facilities should take into consideration the need for proper instructor supervision of activities under his/her jurisdiction. Therefore, visibility and accessibility are essential considerations.

8. Durability and Maintenance - Facilities should be easy and economical to maintain and should be durable.

9. Beauty - Facilities should be attractive and aesthetically pleasing with the utilization of good color dynamics and design.

10. Flexibility and Expansibility - Changes in enrollments, program, and other considerations for future expansion should be considered. Modern thinking has stressed the principle of flexibility in regard to athletic facilities. Flexibility should provide for immediate change through folding partitions, such as doors that separate gymnasia, for overnight change with very little effort in cases in which partitions cannot be removed immediately, and for greater change that can be made within a period of one or two months, such as

during the summer vacation.

11. Economy - The best use of money, space, time, energy, and other essential factors should be considered as they relate to facility planning.

(E) A summary of some of the important guidelines and principles for facility planning for school and college health and athletic programs include the following, according to the American Association for Health, Physical Education and Recreation (1985);

1. All planning should be based on goals that recognize that the total physical and nonphysical environments must be safe, attractive, comfortable, clean, practical, and adapted to the needs of the individual.

2. The planning should include a consideration of the total school athletic facilities and that of the community. Since they are closely allied, they should be planned coordinately and based on the needs of the community. Each should be part of the overall community pattern.

3. Facilities should be geared to health standards. They play an important part in protecting

the health of individuals and in determining the educational outcomes.

4. Facilities play a part in disease control. The extent to which schools and colleges provide for play areas, ample space, sanitary considerations, proper ventilation, heating, and cleanliness will, to some extent, determine how effectively disease is controlled.

5. Administrators must make plans for facilities long before an architect is consulted. Technical information can be procured in the forms of standards and guides from various sources, such as state departments of education, professional literature, and various manuals. Information may also be secured from such important groups as the American Association of School Administrators, National Council on Schoolhouse Construction, and American Institute of Architects.

6. Standards should be utilized as guides and as a starting point. They will prove to be very helpful. However, it is important to keep in mind that standards cannot always be used entirely as developed. They usually have to be modified in the light of local

needs, conditions, and resources.

7. Building and sanitary codes administered by the local and state departments of public health and the technical advice and consultation services available through these sources should be known and utilized by administrators in the planning and construction of facilities. Information concerned with acceptable building materials, specifications, minimum standards of sanitation, and other details may be procured from these informed sources.

8. Health, athletics, and recreation personnel should play important roles in the planning and operation of facilities. The specialized knowledge that such individuals have is very important. Provisions should be made so that their expert opinion will be utilized in the promotion of a healthful and proper environment.

9. Facilities should be planned with an eye to the future. Too often, facilities are constructed and outgrown within a very short time. Units should be sufficiently large to accommodate peak-load participation in the various activities.

estimates should be made with future growth in mind.

10. Planning should provide for adequate allotment of space to the activity and program areas. They should receive priority in space allotment. The administrative offices and service units, although important, should not be planned and developed in a spacious and luxurious manner that goes beyond efficiency and necessity.

11. Geographic and climatic conditions should be taken into consideration in planning facilities. By doing this, the full potentialities for conducting activities outdoors, as well as indoors, can be realized.

12. Architects do not always pay as much attention as they should to the educational and health features when planning buildings and facilities. Therefore, it is important that they be briefed on certain requirements that educators feel are essential in order that the health and welfare of children, youth, and adults may be provided for. Such a procedure is usually welcomed by the architect and will aid him in rendering a greater service to the

community.

13. Facilities should take into consideration all the necessary safety features so essential in programs of health, athletics, and recreation. Health service substations near the gymnasium and other play areas, proper surfacing of activity areas, adequate space, and proper lighting are a few of these considerations.

14. Architects should be constantly aware of the construction of "Barrier Free" facilities. Necessary aids for handicapped students should include ramps for easier wheelchair mobility, elevator transportation for multi-level educational institutions, wider rest room entrances, along with necessary handicap stalls for easier usage. Handicap parking stalls must be incorporated according to local government regulations for regular usage along with possible therapy or activity rooms that lend themselves to primary handicap instruction.

15. It should be kept in mind that the construction of school health, athletic and recreational facilities often tends to set a pattern that will influence parents, civic leaders, and others.

This, in turn, will promote a healthful and safe environment for the entire community.

II. COMMON ERRORS OF HEALTH AND ATHLETIC PERSONNEL IN FACILITY MANAGEMENT

According to the California State Joint Committee on School Health, (1988), some common mistakes made by health and athletic educators in facility management include the following:

1. Failure to adequately project enrollments and program needs into the future (Facilities are difficult to expand or change, so this is a significant error.)

2. Failure to provide for multiple use of facilities.

3. Failure to provide for adequate accessibility for students in health and athletic classes and also for community groups for recreation purposes.

4. Failure to observe basic health factors in planning facilities in regard to lighting, safety, and ventilation.

5. Failure to provide adequate space for the conduct of a comprehensive program of athletic education activities.

6. Failure to provide appropriate accommodations for spectators.

7. Failure to soundproof areas of the building where noise will interfere with educational functions.

8. Failure to meet with the architect to present views on program needs.

9. Failure to provide adequate staff offices.

10. Failure to provide adequate storage space.

11. Failure to provide adequate space and privacy for medical examinations.

12. Failure to provide large enough entrances to transport equipment.

13. Failure to provide for adequate study of cost in terms of durability, time, money, and effective instruction.

14. Failure to properly locate teaching stations with service facilities for both men and women.

III. THE PLANNING TEAM

Planning for meaningful facilities is a team effort. It includes such persons as members of the board of education or board of trustees,

representatives of the administration, students, custodians, curriculum specialists, educational consultants, members of the community, and selected faculty and department heads.

A. Working With the Architect

"The architect is the specialist in facility planning and the leader in the designing of school and college buildings." (Leu, D. J., 1986) As such, he is an important consideration for all persons engaged in health and athletic work. The architect, through his/her training and experience, is a specialist who is competent to give advisory service in all aspects of facility management.

The qualifications of the architect according to Scott and Westkaemper, (1988), are as follows:

1. The architect should be legally qualified to practice in the state and should be in good standing in the profession. The architect must be a person of unquestioned professional character and integrity and must possess high ethical standards.

2. The architect should have had previous successful experience in designing buildings that

demonstrate his/her competence in architectural work. The buildings previously designed by the architect should also reflect a careful study of the peculiar needs of each client.

3. The architect should possess the vision and imagination to translate the educational aims and program specified by the educator into functional buildings. There should be an avoidance of stereotypes. The architect should not possess set preconceived ideas which are hard to change. He/she must be able and willing to mold design to fit needs.

4. The architect must have a record of working cooperatively and harmoniously with his/her clients, educational advisors, and contractors.

5. The architect must have an adequate staff of trained personnel to carry out the building program without undue delay. The architect should either have qualified engineering services available in their own organization or should specify qualified engineering specialists who will work with him/her.

6. The architect should keep abreast of recent research and study concerning materials and mechanical

equipment used in school buildings.

7. The architect should show such economy in the use of space and materials as is consistent with educational needs and the environment.

8. The architect should be competent in the field of site planning and the utilization of space for educational and recreational purposes.

9. The architect must give adequate supervision to the buildings. This is a very important part of the architect's services.

10. The architect should be informed concerning state and municipal building regulations and codes and must show care in complying with them.

11. The architect must demonstrate sound business judgment, proper business procedures, and good record keeping on the job.

Athletic administrators should carefully think through their own ideas and plans for their special facilities and submit them in writing to the architect during the early stages of school and college planning. There should also be several conferences in which the architect and athletic administrators exchange views in

regard to the educational and architectural possibilities to be considered.

"Many architects know little about programs of health and athletic education and therefore welcome the advice of specialists in the field." (Architectural Research Group, 1981, p. 166). The architect might be furnished with such information as the names of school or college plants where excellent facilities exist, kinds of activities that will constitute the program, space requirements for various activities, storage and equipment areas needed, temperature requirements, relation of dressing, showering, and toilet facilities to program, teaching stations needed, best construction materials for activities, and lighting requirements. The athletic administrator may not have all this information readily available, including some of the latest trends and standards recommended for his/her field and endeavor. However, such information can be obtained through professional organizations, other schools where excellent facilities have been developed, and facility books developed by experts in the area.

Mr. William Haroldson, Director of Health and

Physical Education for the Seattle, Washington, Public Schools, has developed a procedural outline in cooperation with three architectural firms, in which are listed some essential considerations for health and athletic educators in their relationships and cooperative planning with architects.

B. Educational Specifications

Adequate educational specifications provide the basis for good planning by the architect:

1. General description of the program, such as the number of teaching stations necessary to service the health and athletic programs for a total student body of approximately _____ boys and _____ girls.

2. Basic criteria as it pertains to the gymnasium: the number of teaching periods per day, capacities, number and size of courts, lockers, and projected total uses contemplated for the facility.

a. Availability to the community.

b. Proximity to parks.

c. Parking.

d. Size of groups that will use gymnasium after school hours.

e. Whether locker rooms will or will not be made available to public use.

3. Specific description of aspects of the health and athletic programs that are of concern to the architects.

a. Class size and scheduling, both present and possible future; number of instructors, present and future.

b. Preferred method of handling students, for example, flow of traffic in classrooms, locker rooms, shower rooms, and going to outside play area.

c. Storage requirements and preferred method of handling all permanent equipment and supplies.

d. Team and other extracurricular use of facilities.

C. Meeting With the Architect

At this point, it is advisable to meet with the architect to discuss specifications in order to ensure complete understanding and to allow the architect to point out certain restrictions or limitations that may

be anticipated even before the first preliminary plan is made.

Design

According to the American Association for Health, Physical Education, and Recreation (1985), the factors to be considered in the design of the facility and discussed with the architect should include the following:

1. Budget. An adequate budget should be allowed. Gymnasia are subject to extremely hard usage, and durability should not be sacrificed for economy.

2. Acoustics. Utilize the service of acoustical consultants.

3. Public address system. How is it to be used -- for instruction, athletic events, and general communication?

4. Color and design. Harmonize with surrounding neighborhood if it is a new school or match other areas if it is an addition to an old school.

5. Fenestration. Consider light control, potential window breakage, vision panel; gymnasium areas should have safety glass or wire protectors.

6. Ventilation. The area should be zoned for flexibility of usage. This means greater ventilation when a larger number of spectators are present, or a reduction for single class groups, or isolated areas, such as locker rooms. Special attention must be given to proper ventilation of uniform drying rooms, gymnasium storage areas, locker and shower areas. (Current and off-season uniform storage areas require constant ventilation when plant is shut down.) Ventilation equipment should have a low noise level.

7. Supplementary equipment in the gymnasium. Such equipment should be held to a minimum. Supplementary equipment, such as fire boxes, should be recessed.

8. Compactness and integration. Keep volume compact -- large, barn-like spaces -- are unpleasant, costly to heat and maintain. Integrate as far as budget permits.

9. Mechanical or electrical features. Special attention should be given to location of panel score boards, chalk boards, fire alarms, folding doors, security systems, intercom devices, and so on.

Further Critique With the Architect

1. "The architect begins the development of his/her plans from his/her understanding of the initial requirements that he/she has considered in relation to the design factors listed." (Architectural Research Group, 1981, p. 332).

2. When it becomes evident that the basic plan is set, the architect usually will call in consulting engineers to discuss the structural and mechanical systems prior to approval of the plan by the school district. These systems will have been given previous attention by the architect but cannot be discussed with the consultants other than in generalities before the plan is in approximate final form. (Architectural Research Group, 1981).

3. A further series of meetings are then held with school personnel regarding approval of preliminary plans and proposed structural and mechanical systems and the use of materials after the incorporation in the preliminary plans.

4. If supplementary financing by governmental agencies other than the school district is involved,

the drawing or set of drawings will have been submitted to those agencies with a project outline or specifications as soon as the plan has been sufficiently developed to establish the area. If the other agency approves the application as submitted by the architect, the final preliminary working drawings are started.

D. Final Processing

It is advisable that all matters that can be settled are decided during preliminary planning in order to save time. If this method is used, greater clarity is assured and less changing or misunderstanding results. Preliminary plans are drawn with the intent of illustrating the plan for the school district; working drawings are technical in nature and are often difficult to interpret. However, according to the California State Department of Education, (1989), "Should school personnel wish to check the working drawings before their completion, they should be welcome to do so."

IV. GENERAL TRENDS IN FACILITY CONSTRUCTION

In respect to educational buildings in general,

there has been considerable change. Traditionally, rectangular in shape, buildings of all shapes and sizes have appeared in recent years, including round, semicircular, quadrangular, hexangular, oval, and pentangular. New types of rooms have also been introduced, including large rooms for team teaching and large lecture groups; classrooms of various shapes and sizes; special rooms including those for dramatics, science, band, choral groups, business machines, and television broadcasting; and more office and conference rooms for such people as counselors and health program and administrative assistants. Furthermore, with the greater use of overhead lighting, there has been a trend to more windowless rooms. In fact, some buildings have no windows whatsoever.

School sites are getting larger and are being located away from busy industrial centers. More space is also being provided for parking.

According to Howard Weinberg of the Educational Facilities Laboratories of New York, (1984):

> The designs of school buildings and other facilities concerned with health and athletic

programs today stress two factors: the educational needs of the children and others who pursue programs in such areas and the need for economy at a time when construction costs are out of site.

The trend is to do away with many of the so-called frills in order to achieve economy but, at the same time, not to compromise educational standards. Educational leaders advocate taking greater advantage of labor, material, and space-saving devices. For example, ceilings in regular classrooms need to be cut down from the traditional 12 feet to 8 feet. Good lighting can be gained under most conditions with only eight foot ceilings. Multipurpose halls can be constructed to double as exhibit and social areas, and gymnasia can be used for physical education and community purposes rather than merely for spectator entertainment. (Gabrielsen, M. S. and Miles, C. M., 1978).

Leu, (1986) states that, "Buildings should be planned with emphasis on the functional, inside

aspects, rather than on the outside ornamentation. Also, it is not economical to have a large auditorium constructed that will be only half filled except on commencement day."

In a recent survey distributed by the American Association of School Administrators, the following features were highlighted as quality factors in constructing up to date building technology in regards to building design;

- bright plastic floor covering
- colorful painted walls
- large classrooms with movable furniture
- single story construction for safety and economics
- sloped ceilings
- walls constructed with special attention to acoustical treatment to reduce noise

According to the Architectural Research Group in their publication Shelter for Physical Education, (ARG) (1981), "Flexibility of design is an important trend in facility management today, with the inclusion of folding partitions and multiple use of facilities for

different types of activities."

The ARG states that the more updated materials being used are as follows:

1. Structural Steel. One of the most versatile of building materials, used in various shapes, sizes, and strengths, providing for greater stability, flexibility, and adaptability.

2. Structural Pine. Used for such purposes as laminated beams to form roof structures and uprights of buildings and other purposes, providing economy of design, beauty, safety, and ease of maintenance.

3. Concrete Block. Increasingly being used to enclose framework and as interior walls; economical and easily removed from non-load bearing walls to develop flexibility.

4. Corrugated Steel. Provides an economical method of long-span roofing.

5. Stone. Used to a great extent for attractive exteriors on schools and for permanence.

6. Carpeting of Classrooms. Helps eliminate noise and is easy to clean and maintain with less man hours required.

7. Tilt-up Concrete Walls. Help provide stability and noise reduction, with the appearance of solid construction.

V. NEW FEATURES IN THE CONSTRUCTION OF PHYSICAL EDUCATION FACILITIES

There are many new trends in facilities and materials for physical education programs. New paving materials, new types of equipment, improved landscapes, new construction materials, new shapes for swimming pools, partial shelters, and synthetic grass are just a few of the many up to date developments. Combination indoor/outdoor pools, physical fitness equipment for outdoor use, all-weather tennis courts, and lines that now come in multicolors for various games and activities are other new developments. (Gabrielsen, M. A., 1988).

In gymnasium construction some of the new features include the utilization of modern engineering techniques and materials. This has resulted in welded steel and laminated wood modular frames; arched and gabled roofs; domes that provide areas completely free from internal supports; exterior surfaces of aluminum,

steel, fiber, glass, and plastics; different window patterns and styles; several kinds of floor surfaces of non-slip material; prefabricated wall surfaces; better lighting systems with improved quality and quantity and less glare. Facilities are moving from use of regular glass to either plastic and fiber glass panel or to overhead skydome. (Scott, H. A. and Westkaemper, R. B., 1988).

Lightweight fiber glass, sandwich panels, or fabricated sheets of translucent fiber glass laminated over an aluminum framework are proving popular. They require no painting, the cost of labor and materials is lower, there is no need for shades or blinds to eliminate glare, and the breakage problem is reduced or eliminated.

Locker rooms and service areas are including built-in locks with built-in combination changers that permit the staff to change combinations when needed. There is more extensive use of ceramic tile because of its durability and low-cost maintenance. Wall-hung toilet compartment features permit easier maintenance and sanitation with no chance for rust to start from

the floor. Odor control is being effectively handled by new dispensers. New thin-profile heating, ventilating, and air-conditioning fan coil units are now being used. (Dickey, D. D., Athletic Lockers for Schools and Colleges, 1987).

There is also a trend toward better ventilation, heating, and lighting and more easily cleaned materials on walls and floors to guarantee improved sanitation.

New developments in regard to indoor swimming pools include automatic control boards, where one person can have direct control over all filters, chlorinators, chemical pumps, and level controllers; much larger deck space area constructed of non-slip ceramic tile; greater use of diatomaceous earth rather than sand filters to filter out small particles of matter including some bacteria; underwater lighting; water-level deck pools (where the overflow gutters are placed in the deck surrounding the pool instead of in the pool's side walls and provision is made for grating that is designed so that the water that overflows is drained to a trench under the deck without the possibility of debris returning to the pool; air-

supported roofs that can serve as removable tops in a combination indoor/outdoor pool; and movable bulkheads. (Gabrielsen, M. A., Swimming Pool Planning and Utilization, 1983).

New developments in regard to outdoor swimming pools involve new shapes - including oval, wedge, kidney, figure eight, cloverleaf, and bean shaped - as well as modern accessories, including gas heaters, automatic water levelers, and retractable roofs and sides. More supplemental recreational facilities, such as shuffleboard courts, volleyball, and horseshoes, and more deck equipment, including guard rails, slides, and pool covers, are being included around larger pools. (Grieve, A., Legal Considerations of Equipment and Facilities, 1977).

A brief listing of some features that are being used in many school buildings in the area of health and athletic education have been developed by the Educational Facilities Laboratories, a non-profit organization financed by the Ford Foundation. It enters into joint research projects with schools interested in testing the practicality of some new kind

of facility, design, or material.

In a study of the feasibility of the use of limited shelters for physical education, College Station, Texas, the geodesic field house has been compared, in cost of construction, with a conventional gymnasium and found to be slightly less expensive. According to the Educational Facilities Lab. Inc., 1984, p. 224:

> This type of structure has applicability primarily to programs in which strong emphasis is placed on athletics and spectator appeal or to communities that need a very large auditorium. For these reasons it seems that the geodesic field house has limited value for the general physical education program.

Bubble tops for swimming pools and tennis courts make it possible to use them as outdoor facilities in summer and as indoor facilities in the winter. The roof made of vinyl-coated fabric costs less per square foot in contrast to a wooden dome or a geodesic dome. (Educational Facilities Lab. Inc., 1984).

Partial shelters for physical education activities

have been studied and are in use in many Texas public schools. They are considered practical for elementary school physical education in which change from school clothes many times is not required. These partial shelters protect children from extremes of climate and, at the same time, allow for exercise in the open air. They are of course more economical than traditional facilities. (Architectural Research Group, 1981).

New artificial turf has been developed and successfully tried. The initial reaction of students and teachers is that the turf provides excellent traction and helps the acoustics. It is easily cleaned with a vacuum.

Rubber-cushioned tennis courts are being used in some places. They consist of tough durable material about four inches thick, with the individual advantages of clay, turf, and composition courts being combined into one type of surfacing.

Other new developments in health and physical education facilities that have come into use in schools across the country are numerous. Sculptured play apparatus has been produced by a number of firms. It

is designed to be more conducive to imaginative movements and creativity than conventional equipment. (AIAAHPER, 1980). The AIAAHPER concluded on page 321 that:

> Hard-surfaced, rubberized, all-weather running tracks, radiant heating of decks on swimming pools, floating roofs with the elimination of non-load bearing walls, interior climate control, better indoor and outdoor lighting, rubber padding for use under apparatus, park-school concept with land being used for school and recreational purposes, outdoor skating rinks, translucent plastic materials for swimming pool canopies and other uses, electrically operated machinery to move equipment and partitions and bleachers, and auxiliary gymnasia used for both activity and classroom use are a few more of the new developments in facilities for health and athletic programs.

A. Park-School Facilities

The park-school complex is another innovation that should be mentioned. In this type of setup the school

is erected near a park, and the park facilities are used by both the school and the community. This has implications particularly for physical education and recreation programs, since the school usually uses the park facilities during school hours and the recreation department uses them after school hours, on weekends, and during vacation periods.

Teaching Stations

The teaching station concept should be taken into consideration when scheduling athletic courses. A teaching station is the space or setting where one teacher or staff member can carry on athletic activities for one group of students. The number and size of teaching stations available, together with the number of teachers on the staff, the size of the group, the number of times the group meets, the number of periods in the school or college day, and the program of activities, are important items to consider in planning.

According to the participants in the National Facilities Conference, the following formulas are listed for determining the number of teaching stations

needed.

Secondary Schools and Colleges

The formula for computing the number of teaching stations needed for physical education in colleges and secondary schools would be as follows:

$$\text{Minimum number of teaching stations} = \frac{\text{Number of Students}}{\text{Average number of students per instructor}} \times \frac{\text{Number of periods class meets each week}}{\text{Total number of class periods in school work}}$$

For example, if a school system projects its enrollment to 700 students and plans six class periods a day with an average class size of 30 students, and athletic classes are required daily, the formula would read as follows:

$$\text{Minimum number of teaching stations} = \frac{700 \text{ students}}{30 \text{ per class}} \times \frac{5 \text{ periods per week}}{30 \text{ periods per week}} = \frac{3{,}500}{900} = 3.9$$

Colleges could substitute pertinent facts into the same formula to determine the number of teaching

stations they would need.

B. Indoor Facilities

Several special areas and facilities are needed by programs of health, athletic education, and recreation. A few of the indoor areas that are important and prominent in the conduct of these specialized programs are briefly discussed in this section.

Administrative and Staff Offices

It is important, as far as it is practical and possible, for professional persons working in health, athletic education and recreation to have a section of a building set aside for administrative and staff offices. As a minimum there should be a large central office with a waiting room. The central office will provide a place where the secretarial and clerical work can be performed, space for keeping records and files, and storage closets for office supplies. The waiting room can serve as a reception point where students and visitors can wait until staff members are ready to see them. Separate offices for the staff members should be provided, if possible. This allows for a place where conferences can be held in private and without

interruption. This is a very important consideration for health counseling and for discussing scholastic, family, recreational, and other problems. If separate offices are not practical, a desk should be provided for each staff member. In this event, there should be a private room available to staff members for conferences. (California State Department of Education, 1982.)

Other facilities that make for a more efficient and enjoyable administrative and staff setup are staff dressing rooms, departmental library, conference room, and toilet and lavatory facilities.

Locker, Shower, and Drying Rooms

Health, athletic education, and recreation activities require facilities for storage of clothes, showering, and drying. "These are essential to good health and for a well organized program. The reason such facilities are often not fully utilized is that poor planning makes them inadequate and uncomfortable." (Dickey, D. D., p. 59).

Locker and shower rooms should be readily accessible to activity areas. Locker rooms should not

be congested places that students want to get out of as soon as possible. Instead, they should provide ample room, both storage and dressing type lockers, stationary benches to sit upon, mirrors to aid in dressing, recessed lighting fixtures, and drinking fountains. (California State Joint Committee on School Health, The Committee, 1988).

According to the State of California building code, "An average of 14 square feet per individual at peak load, exclusive of the space utilized by the lockers, is required to provide proper space."

Storage lockers should be provided for each individual in the school or athletic program. Dickey states (p. 101) that, "An additional 10% should be installed for purposes of expanded enrollments or membership. These are lockers for the permanent use of each individual and can be utilized to hold essential clothing and other supplies." They can be smaller than the dressing lockers and some recommended sizes are: 7-1/2 by 12 by 24 inches, 6 by 12 by 26 inches, and 7-1/2 by 12 by 18 inches. The basket type lockers are not looked upon with favor by many experts, because of

the hygiene factor, the fact that an attendant is required for good administration of this system, and the necessity of carting the baskets from place to place. (Dickey, D. D., 1987).

Dressing lockers are utilized by participants only when actually engaging in activity. They are large in size, usually 12 by 12 by 54 inches or 12 by 12 by 72 inches for secondary schools and colleges and for community recreation programs.

Shower rooms should be provided that have the gang type shower for boys and combination of the gang and cubicle type showers for girls. Some facility planners recommend that girls have a number of shower heads equal to 40% of the enrollment at peak load and the boys, 30% of the enrollment at peak load. (Grieve, A., 1987). Another recommendation is one shower head for four boys and one for three girls at peak load. These should be four feet apart. If showers are installed where a graded change of water temperature is provided and where the individual progresses through such a gradation, the number of shower heads can be reduced. The shower rooms should also be equipped with liquid

soap dispensers, good ventilation and heating, floors constructed of non-slip material, and recessed plumbing. The ceiling should be dome-shaped so that it will more readily shed water.

Handicap shower stalls need to be spacious and abundant in number. Easy entrance and exit ramps need to be available. Shower heads, along with adjustable faucet handles should be at a height conducive to handicap conditions. Along with special consideration for actual showering areas, handicap stalls should include partitions for privacy.

The drying room adjacent to the shower room is an essential. This should be equipped with proper drainage, good ventilation, towel bar, and a ledge that can be used to place a foot upon while drying. (Leu, D. J., 1986).

A report by the California State Department of Education on the planning of facilities for health, athletic education, and recreation in 1988 listed the following common errors in service facilities:

1. Failure to provide adequate locker and dressing space.

2. Failure to plan dressing and shower area so as to reduce foot traffic to a minimum and establish clean, dry aisles for bare feet.

3. Failure to provide a non-skid surface on dressing, shower, and toweling room floors.

4. Failure to properly relate teaching stations with service facilities.

5. Inadequate provision for drinking fountains.

6. Failure to provide acoustical treatment where needed.

7. Failure to provide and properly locate toilet facilities to serve all participants and spectators.

8. Failure to provide doorways, hallways, or ramps so that equipment may be moved easily.

9. Failure to design equipment rooms for convenient and quick check-in and check-out.

10. Failure to provide mirrors and shelving for boys' and girls' dressing facilities, and lipstick tissues for girls.

11. Failure to plan locker and dressing rooms with correct traffic pattern to swimming pool.

12. Failure to construct shower, toilet, and

dressing rooms with sufficient floor slope and properly located drains.

13. Failure to place shower heads low enough and in such a position that the spray is kept within the shower room.

14. Failure to provide shelves in the toilet room.

Gymnasia

> The type and number of gymnasia that should be part of an athletic plant will depend upon the number of individuals who will be participating, the variety of activities that will be conducted in the area, and the institution's level of concern. (AAHPER, 1985, p. 336).

General construction features to which most individuals will agree include smooth walls, hardwood floors (maple preferred-laid lengthwise), recessed lights, recessed radiators, adequate and well-screened windows, and storage space for the apparatus and other equipment utilized. It is also generally agreed that in schools it is best to have the gymnasium located in a separate wing of the building to isolate the noise

and also as a convenient location for community groups that will be anxious to use such facilities. It is necessary to have the facility near parking spaces that are central to the entire academic institution. (AAHPER, 1985).

The American Association for Health, Physical Education, and Recreation has listed several important factors to keep in mind when planning the gymnasium:

1. Hard maple flooring which is resilient and non-slippery.

2. Smooth interior walls to a height of 10 or 12 feet.

3. Upper walls need not be smooth.

4. The ceiling should reflect light and absorb sound, and there should be at least 22 to 24 feet from the floor to exposed beams.

5. Windows should be 10 to 12 feet above floor and placed on long side of room.

6. Heating should be thermostatically controlled, radiators recessed with protecting grill or grate if placed at floor level.

7. Sub-flooring should be moisture and termite

resistant and well ventilated.

8. Prior consideration must be given concerning the suspension of apparatus from the ceiling and the erection of wall-type apparatus.

9. Mechanical ventilation may be necessary.

10. Proper illumination meeting approved standards and selectively controlled for various activities must be designed.

11. Floor plates for standards and apparatus must be planned, as well as such items as blackboards, electric clocks and scoreboards, public address system, and provisions for press, radio, and television.

12. Floor markings for various games should be placed after prime coat of seal has been applied and prior to application of the finishing coats.

"The number of teaching stations desired will play an important part in deciding the size and number of gymnasia," (Scott, H. A., and Westkaemper, 1988, p. 75-76). A teaching station is a place where a group meets with a teacher or leader for the conduct of certain activities. The degree to which a varied program is offered, the facilities available, and the

number of staff members assigned will determine the number of teaching stations utilized in any program.

In addition to an adequate number of teaching stations, it is also important to give attention to official size courts, adequate space for safe and enjoyable participation, and spectator space, if such is desired. When spectator space is provided, bleachers that can be telescoped and recessed in the walls are advisable, as they do not take space away from activity participation. (Gabrielsen, M. A., and Miles, 1988).

Many gymnasia have folding doors that divide them into halves, thirds, or fourths and allow for activities to be conducted simultaneously on each side. This has proved satisfactory where separate gymnasia could not be provided.

If two teaching stations are necessary, an area 66 feet by 96 feet of floor space, exclusive of bleachers, will provide these teaching stations of minimum size. (Leu, D. J., 1986). The folding partition that provides the two teaching stations should be motor driven. Where seating capacity is desired, additional

space will be needed. Leu states that, "If more than two teaching stations are desired, the gymnasium area may be extended to provide an additional station or activity rooms may be added." (p. 226) "Of course, the addition of a swimming pool will also provide an additional teaching station." (Gabrielsen, M. S., 1983, p. 45).

Other considerations for gymnasia should include provisions for basketball backboards, mountings for various apparatus that will be used, recessed drinking fountains, places for hanging mats, outlets for various electric appliances and cleaning devices, proper line markings for activities, bulletin boards, and other essentials to a well-rounded program.

According to Gabrielsen and Miles, common errors in construction of gymnasia are as follows:

1. Provision for spectator space at the sacrifice of instructional space.

2. Failure to mark floor for possible court games such as badminton, basketball, and volleyball.

3. Installation of permanent bleachers instead of folding bleachers, resulting in loss of maximum use

of floor space.

4. Failure to provide ventilated space below a built-up-gymnasium floor.

5. Natural lighting construction permitting leakage and glare problems.

Special Activity Areas

Although gymnasia are large and take up considerable space, there should still be additional areas for activities essential to school programs of health, athletic education, and recreation.

Leu (p. 66) suggests that:

> Wherever possible additional activity areas should be provided for remedial or adapted activities, apparatus, handball, squash, weight lifting, dancing, rhythms, fencing, and dramatics and for various recreational activities such as arts and crafts, lounging and resting, and bowling. The activities to be provided will depend on interests or participants and type of program. The recommended size of such auxiliary gymnasia is 30 by 50 by 24 feet, or preferably 40 by 60 by 24. The remedial or adapted activities room should be

equipped with such items as horizontal ladders, mirrors, mats, climbing ropes, stall bars, and benches, pulley weights, dumbbells, Indian clubs, shoulder wheels, and such other equipment as is suited for the particular needs of the individuals participating.

Auxiliary Rooms

The main types of auxiliary areas found in connection with school health and athletic education and recreation facilities are supply, checkout, custodial, and laundry rooms.

Supply rooms should be easily accessible from the gymnasium and other activity areas. In these rooms will be stored balls, nets, standards, and other equipment needed for the programs that are offered. The size of these rooms will vary according to the number of activities offered and the number of participants.

Checkout rooms should be provided on a seasonal basis. They will house the equipment and supplies used in various seasonal activities.

Custodial rooms provide a place for storing equipment and supplies utilized in the maintenance of

these specialized facilities.

Laundries should be adequate in size to accommodate the laundering of such essential items as towels, uniforms, and swimming suits. (Grieve, A., 1987).

Swimming Pools

Gabrielsen (p. 1) says, "In the year 1900 there were very few indoor swimming pools in the public schools in the United States. Today, however, there are approximately 4,200 swimming pools in public schools."

According to Gabrielsen (p. 2):

> Schools should have swimming pools for many reasons. Swimming is the number one recreation activity in America, and it is often listed by secondary school students as their favorite activity. Teaching all children how to swim could reduce the more than 10,000 deaths by drowning that occur in the United States each year. Knowing how to swim leads to many other excellent aquatic activities such as surfing, sailing, canoeing, fishing, scuba diving, and water skiing.

Gabrielsen, in his report in 1983, cited the major design decisions that must be made if a school or college decides to construct a pool. These include such items as the nature of the program to be conducted in a pool, type of overflow system to be used, dimensions and shape of pool, depth of the water, type of finish, type of filters and water treatment system, construction material to be used, amount of deck area, climate control, illumination, and number of spectators to be accommodated. The range in cost of pools can very from $6.65 per square foot to $23.00 per square foot depending upon the material used, the design, and the geographic location. Cost of pool enclosures vary from about $4.30 to $6.20 per square foot for air structures, to $11.25 to $13.85 per square foot for prefabricated, lightweight aluminum dome frames supporting reinforced plastic roof tents of acrylic panels, to $23.85 to $31.00 per square foot for steel frame with masonry or fireproof panel walls, steel roof trusses, beams, or joints, and fire-resistive metal or concrete plank roof deck.

Some mistakes that Gabrielsen says should be

avoided in the construction of a pool include entrances to the pool from the locker rooms opening onto the deep rather than the shallow end of the pool, pool base finished with slippery material such as glazed tile, insufficient depth of water for diving, improper placement of ladders, insufficient rate of recirculation of water to accommodate peak bathing loads, inadequate storage space, failure to use acoustical material on ceiling and walls, insufficient illumination, slippery tile on decks, and an inadequate overflow system at the ends of the pool.

Finally, in this report are listed some trends and innovations in pool design and operation. These include: the Rim-Flow Overflow System, inflatable roof structure, the skydome design, pool tent cover, floating swimming pool complex, prefabrication of pool tanks, automation of pool recirculating and filter systems, regenerative cycle filter system, adjustable height diving platform, variable depth bottoms, fluorescent underwater lights, automatic cleaning systems, and wage making machines.

Present types of swimming pools have in the main

two objectives, according to the Joint Committee on Health Problems in Education, 1989. One to provide instructional and competitive programs and the other for recreation.

Gabrielsen (p. 2) suggests that:

> The swimming pool should be located on or above the ground level, have southern exposure, be isolated from other units in the building, and be easily accessible from the central dressing and locker rooms. Materials that have been found most adaptive to swimming pools are smooth, glazed, light-colored tile or brick.

The deck space around the pool should be constructed of a non-slip material and provide ample space for land drills and demonstrations. The area above the water should be unobstructed. The ceiling should be at least 25 feet above the water if a three meter diving board will be used. The walls and the ceiling of the pool should be acoustically treated.

The swimming pool should be constructed so as to receive as much natural light as possible, with the windows located on the sides rather than on the ends.

Artificial lighting should be recessed in the ceilings. Good lighting is especially important in the areas where the diving boards are located. "Underwater lighting is beautiful but not an essential." (Grieve, A., 1987, p. 38).

There should be an efficient system for adequately heating and circulating the water. The temperature of the water should range from 75 to 80 degrees, according to Leu.

One of the best cost efficient methods of maintaining water temperature is through solar heating units. These units, according to Gabrielsen, (p. 6) "are suitable, low maintenance, and environmentally efficient."

If spectators are to be provided for the California Department of Education recommends that a gallery that is separate from the pool room proper be erected along the length of the pool.

An office adjacent to the pool where records and first-aid supplies can be kept is advisable. Such an office should be equipped with windows that overlook the entire length of the pool. Also, there should be

lavatory and toilet facilities available.

Gabrielsen (p. 3) concludes that:

> The swimming pool is a costly operation. Therefore, it is essential that it be planned with the help of the best advice obtainable. Specialists who are well acquainted with such facilities and who contact swimming activities should be brought into conferences with the architect, a representative from the public health department, and experts in such essentials as lighting, heating, construction, and acoustics.

Health Science Instruction Facilities

According to the California State Joint Committee on School Health, The Committee, 1988, "The health science instruction program should have facilities especially designed to meet the needs of educating students in respect to health matters." The National Facilities Conference stresses the following standards:

1. Space for 35 square feet per pupil, maximum of 30 pupils.
2. Flexible teacher location.
3. Provision for various teaching methods,

including laboratory demonstration.

4. Flexibility of seating.

5. Hot and cold running water and gas outlet.

6. Educational-exhibit space.

7. Storage space.

8. Provision for using audio-visual devices (electrical outlets, window shades, screens).

9. Access to health service unit.

10. Exemplary environmental features.

11. Adequate hand washing facilities, drinking fountains, and toilets.

12. Air-conditioning.

13. Accessible to and usable by the disabled.

14. Planned jointly for community use.

Classrooms

Classrooms utilized for health instruction should include the requirements discussed in relation to seating, lighting, color of walls and ceilings, heating and ventilation, should be healthful, comfortable, and adaptable, regardless of whether they are being used for health instruction or some other subject. (Leu, D. J., 1986).

There is, according to the State of California Department of Education, (1982), one feature, however, that should receive consideration if there is not a special room set aside for such a purpose. This is the use of audiovisual equipment. There are sample resources for audiovisual material that can be utilized very effectively in any health instruction program. There should be available projection and sound equipment including an opaque projector, slide projector, filmstrip projector, motion picture projector, turntables, and cable outlets for television instruction. There should also be outlets for electrical connections. Projection equipment should be installed in the rear of the room and audio equipment outlets in the front. There should be shades or other facilities for darkening the room. Finally, a screen should be available.

Another consideration in any health instruction room is a large display board that can be used to illustrate the material that is presented.

C. Health Service Facilities

The health services are a very important part of

the health program and require adequate facilities to carry out the responsibilities that are assigned to this health area. DeWeese and Moore made an extensive study of the health service facilities and concluded that at least 720 square feet of floor surface should be provided and include the following:

1. Administrative office.
2. Library for health science instruction material.
3. Rest rooms.
4. Examination room.
5. Conference facilities.
6. Space for first-aid care and treatment.
7. Space for scientific and educational displays.
8. Storage and toilet facilities.

Health Service Suite

To have a practical health service setup that can accommodate examination work, a suite is needed rather than just one room. Grieve recommends at least four rooms, which include examining, waiting, and rest rooms for boys and for girls. In addition, he states

(p.38), "That there should be toilet facilities for each sex. Several exits from the examining room are recommended as a means of expediting the conduct of health services and eliminating confusion."

The health service suite may also become the nurse or doctor's headquarters. In this case, there should be room for various items that are needed in their work, such as health records, desk, and files.

The color and furnishings of the waiting room should provide an attractive and cheerful atmosphere. A desk for clerical help can also be provided. There should be screens, if necessary, to give privacy to the examining and rest rooms that are part of the health suite and attached to the waiting room.

The examining room should be large enough to accommodate all the necessary equipment, supplies, and measuring devices. Provisions for eye testing, weighing, first aid, examining procedures, parent interviews, and other essentials should be kept in mind.

The rest rooms should be large enough to hold necessary cots, tables, and other items. They should

also be equipped with subdued lighting, walls and ceilings that keep noise to a minimum, and other conveniences that contribute to rest. (AAHPER, 1985).

A Committee of School Health Service Facilities of the American School Health Association conducted an extensive study in 1988 of health service units throughout the country. This committee, recognizing that there could be no standard health unit that would meet the needs of schools everywhere, did, however, indicate what an average health unit might be, on the basis of statistical information gathered from their survey. According to this committee, the school health service unit consisting of approximately 400 square feet would probably contain the following:

1. Examining room.
2. Cot room.
3. Toilet room.
4. Storage spaces.
5. Testing and dressing room.
6. Waiting room.
7. Dental examination room, in some cases.

Health service units for secondary schools would

require approximately 600 to 700 square feet of floor space and consist of the following:

1. Examination room.
2. Two cot rooms.
3. Two toilet rooms.
4. Storage spaces.
5. Waiting room.
6. Testing room.

The following general statements help describe some essential considerations for a health service unit according to The Joint Committee on Health Problems in Education of National Education Association and American Medical Association, (1989).

1. Future expansion should be considered.
2. The unit should be located near the administrative area, for ease of supervision, and away from noisy areas such as shops, gymnasia, and music rooms.
3. Finishes should be of a type that can be easily maintained.
4. Attractive colors are important.
5. Service facilities such as sinks, lavatories,

counters, and toilets should be of appropriate size for the pupils to be served.

6. Telephones are a necessity.

Cafeteria

The institution's eating facility is a vital factor in the general health of any student and is an important part of his educational experiences. Furthermore, DeWeese, D. D., (p. 415) states that, "The cafeteria in any school or college recreational or other building is an important consideration and concern of individuals engaged in health, physical education, and recreation work."

The eating cafeteria should be easily accessible from anywhere within the building, as well as the service driveway. The size depends upon the number of individuals to be served. In general, from 10 to 12 square feet per person is required at peak load for the dining area. (California State Department of Education, 1982).

The kitchen area will depend in size upon the number of meals to be prepared. The kitchen should contain all the equipment and supplies essential to the

preparation and serving of good meals. Such equipment as ranges, ovens, sinks, dish-washing machines, refrigerators, tables, service trucks, counters, and kitchen machines such as mixers, peelers, and slicers should be provided.

The dining room part of the cafeteria should be equipped with the necessary tables and chairs, serving counter, refrigerated counters, silver, napkins, plates, trays, drinking fountain, and other essentials.

The physical appearance of the cafeteria should be attractive, with adequate lighting, light colors, and floors that are easy to clean. The cafeteria should be quiet and conducive to enjoyable and satisfactory eating conditions.

D. Outdoor Facilities

The outdoor facilities that will be discussed in this section are: (a) play areas, (b) game areas, (c) outdoor swimming pools; and, (d) camps.

Many things must be taken into consideration when planning outdoor facilities for schools. The location, topography, soil drainage, water supply, size, shape, and natural features are a few important considerations

before a site is selected. The outdoor facilities should be as near the gymnasium and locker rooms as possible and yet far enough from the classrooms so that the noise will not be a disturbing factor.

The play areas should serve the needs and interests of the students for the entire school year and at the same time should provide a setting for activities during vacation periods. The needs and interests of the citizens of the community must also be taken into consideration, since the play areas can be used for part of the community recreation program. This is especially important in some communities where such facilities can be planned as education and recreation centers. Since the community uses the areas after the school day is over, the plan is feasible.

The size of the playground area should be determined on the basis of activities offered in the program and the number of individuals who will be using the facilities at peak load. Possibilities for expansion should also be kept in mind. (The State Education Department, New York, 1974).

Playground and recreation areas will be discussed

under the three headings of elementary, junior high, and senior high school.

1. Elementary School

The activities program in the elementary school suggests what facilities should be available. Leu states (p. 233) that:

> Children of the primary grades engage in big muscle activity involving adaptations of climbing, jumping, skipping, kicking, throwing, leaping, and catching. The students in the intermediate and upper elementary grades utilize not only these activities but also such other ones as games of low organization, team games, and fundamental skills used in playing these games.

The playground area for an elementary school should be located near the building and should be easily accessible from the elementary classrooms. The kindergarten children should have a section of the playground for their exclusive use. This should be at least 5,000 square feet in size and separated from the rest of the playground. It should consist of a surfaced area, a grass area, and a place for sand and

digging. The sand area should be enclosed to prevent the sand from being scattered. It is also wise to have a shaded area where storytelling and similar activities may be conducted. Some essential equipment would include swings, slides, seesaws, climbing structures, tables, and seats.

The children, older than kindergarten age in the elementary school, should have play space that includes turf, apparatus, shaded, multiple-use paved, and recreation areas.

The turf area provides space for many field and team games. Provisions for speed ball, soccer, field hockey, softball, and field ball could be included.

The apparatus area should provide such equipment as climbing bars in the form of a jungle jim, horizontal bars, and giant strides. There should be ample space to provide for the safety of the participants.

The shaded area may provide space for such activities as marbles, hopscotch, or ring toss and also storytelling.

The multiple-use paved area may serve for a

variety of purposes and activities on a year-round basis by both school and community. It can house basketball, tennis, tetherball, four square, and handball courts, games of minimum organization, and other activities. This area should be paved with material that takes into consideration resiliency, safety, and durability. Rapid and efficient drainage is essential. Lines may be painted on the area for the various types of games. Schools should allow additional space adjacent to this area for possible future expansion.

Other recreation areas that have important implications for the community are a landscaped, park-like area, a place for quiet activities such as dramatics and informal gatherings, a wading pool, a place for older adults to congregate, and a place for children to have gardening opportunities. (Scott, H. A. and Westkaemper, R. B., 1988).

2. Junior High School

The junior high school play and recreation area, planned and developed for the children who attend the school and also for the adults in the community, should

be located on a larger site than that for elementary school.

Bookwalter suggests that it consist of from 10-25 or more acres. Local conditions will play a part in deciding the amount of area available.

Many of the facilities of the elementary school will be a part of the junior high school. In many cases, however, the various areas should be increased in size. There should be a place for small children, apparatus, quiet games, and a wading pool, as in the elementary schools. The multiple-use paved area or turf area for games should be increased in size.

The program for junior high school girls will stress a broad base in fundamentals for participation in such activities as archery, volleyball, tennis, and hockey.

The boys' program will include soccer, touch football, baseball, speed ball, softball, and golf. A track should also be included. Therefore, the necessary facilities should provide for those activities that will be part of the regular athletic education class as well as the intramural program.

A landscaped, park-like area should be provided for the various recreational activities in which people in the community will like to engage, such as walking, picnicking, skating, and fly casting. (AAHPER, 1985).

3. Senior High School

The senior high school athletic education program is characterized to a more pronounced degree by a team game program in various activities.

> This emphasis, together with the fact that facilities are needed for the recreational use of the community, requires an even larger area than those for the two previous educational levels. Estimates range from 10 to 40 acres for such a site. (Leu, D. J., 1986, p. 134).

Most of the areas that have been listed in discussing the elementary and junior high schools should again be included at the senior high school. This means there would be facilities for young children, such as apparatus, pool, and place for quiet activities. Where there was an increase in size of many areas at the junior high over the elementary level, there should again be an increase in size at the

high school level over the junior high.

According to Leu, (p. 136-137):

> There should be considerably more space for the various field games so that not only can physical education class instruction take place but also at the same time full-sized official fields will be available for such activities as softball, field hockey, soccer, speedball, lacrosse, football, and baseball. This would be on an intramural as well as an interscholastic basis. Also, the community recreation program could make use of these facilities.

Football and track can be provided for in an area of approximately four acres, with the football field being placed within the track oval. A baseball field is questionable in such an area, because track and baseball are both spring sports. Baseball needs an area of about 350 feet by 350 feet. This allows for a minimum of 50 feet from home plate to the backstop and also allows for adequate spaced outside the first and third base lines.

Game Areas

The recommended dimensions for game areas for school athletic education programs need to be established by each state depending on environment and geographic area. An area of about one acre will accommodate four tennis courts, four handball courts, three badminton courts, and two volleyball courts.

There should be a separate area for high school girls with a minimum area of 320 feet by 280 feet, which is approximately two acres in size. Such an area will permit basic athletic education instructional classes to be held and also provide fields for softball, field hockey, soccer, speedball, lacrosse, and other activities.

High school boys should also be adequately provided for in addition to the many court areas that include basketball, softball, and other activities. There should be proper space for track, if desired, and an oval one-fourth mile in length or at least a straightaway of 380 feet and 15 to 20 feet in width. Of course, there is also the need for the interschool athletic area, which usually includes football, track,

baseball, and soccer. (California State Department of Education, 1982).

Not to be forgotten should be the winter activities. With such activities gaining increased popularity, provision should be made for skiing, sleds, skating, and other winter activities.

The New York State Department of Education (p. 220) recommends that:

> The outdoor facilities for the basic needs of an athletic education and recreation program, from kindergarten to grade twelve, should consist of a minimum of 12 acres of land. This area should be divided into an elementary area of three acres; courts area of one acre; high school girls' area of two acres, a high school boys' intramural area of three acres, and an interschool athletic area of three acres. The interschool athletic area would be used for baseball in the spring and summer and football or soccer in the fall. A quarter-mile track could also be added, but in this case the interschool athletic program should have seven acres of land. The recommendation

further points out that if archery, golf, natural theater, picnic area, skiing, and tobogganing area are desired, additional land will be necessary.

Outdoor Swimming Pools

The outdoor swimming pool is a popular and important facility in many communities. To a great degree climatic conditions will determine the advisability of such a facility.

Outdoor pools are built in various shapes, including oval, circular, T-shaped, and rectangular. Rectangular pools are most popular because of easier construction and because they lend themselves better to competitive swimming events.

The size of pools varies, depending upon the number of persons they are to serve. Gabrielsen, M. S., (p. 197) recommends that, " Twelve square feet of water space per swimmer be allotted for swimming purposes or, if the deck is taken into consideration, 20 square feet of space for swimming and walking area per swimmer."

The decks for outdoor pools should be larger than those for indoor pools. This larger space will serve

to accommodate more people and also provide space for sunbathing.

Shower facilities should be provided to ensure that every swimmer takes a soapy shower in the nude before entering the water. A basket system for storing clothes has been found practical instead of the locker type of system that is used inside. In cases where the pool is located adjacent to the school, it sometimes is practical to use the locker and shower facilities of the school. However, it is strongly advised that wherever possible separate shower and basket facilities be provided. Toilets should also be provided for the convenience of the swimmers.

Since swimming is popular at night as well as in the daytime, lights should be provided in order that a great percentage of the population may participate in this healthful and enjoyable activity.

Diving boards are generally constructed of plastic and glass. The standard heights of boards are one and three meters. The one-meter board should be over water 9 to 10 feet in depth and the three-meter board over water 10 to 12 feet in depth. The board or any diving

takeoff area should have a non-skid covering. The boards should be securely fastened to the ground or foundation.

The rules and regulations concerning diving equipment should be clearly posted near the diving areas. Roping off and patrolling the area is a good safety precaution. (Gabrielsen, M. A., 1983).

VI. CONCLUSION/SUMMARY

The role of administration is becoming increasingly significant in determining the success of health and athletic programs. A large degree of specific organization must be desired by any administrator if his or her school is going to succeed in meeting the students needs.

Among one of the most neglected areas of administration is the overseeing of the physical plant. By being up-to-date on new techniques and procedures of plant structures, an institution can explode forward in meeting the increasing demands of the academic student. The administrator's concern for the physical structures of the institution help provide his working staff with a confidence in not only his or her leadership but

provides the community with a sense of loyalty because of his/her direct participation in the benefit of each parents child's learning process.

This text has been an attempt to bring into focus the overall responsibilities of how the academic administrator must prepare for meeting the great demands of physical plant supervision as it relates to the overall educational process of students at every level.

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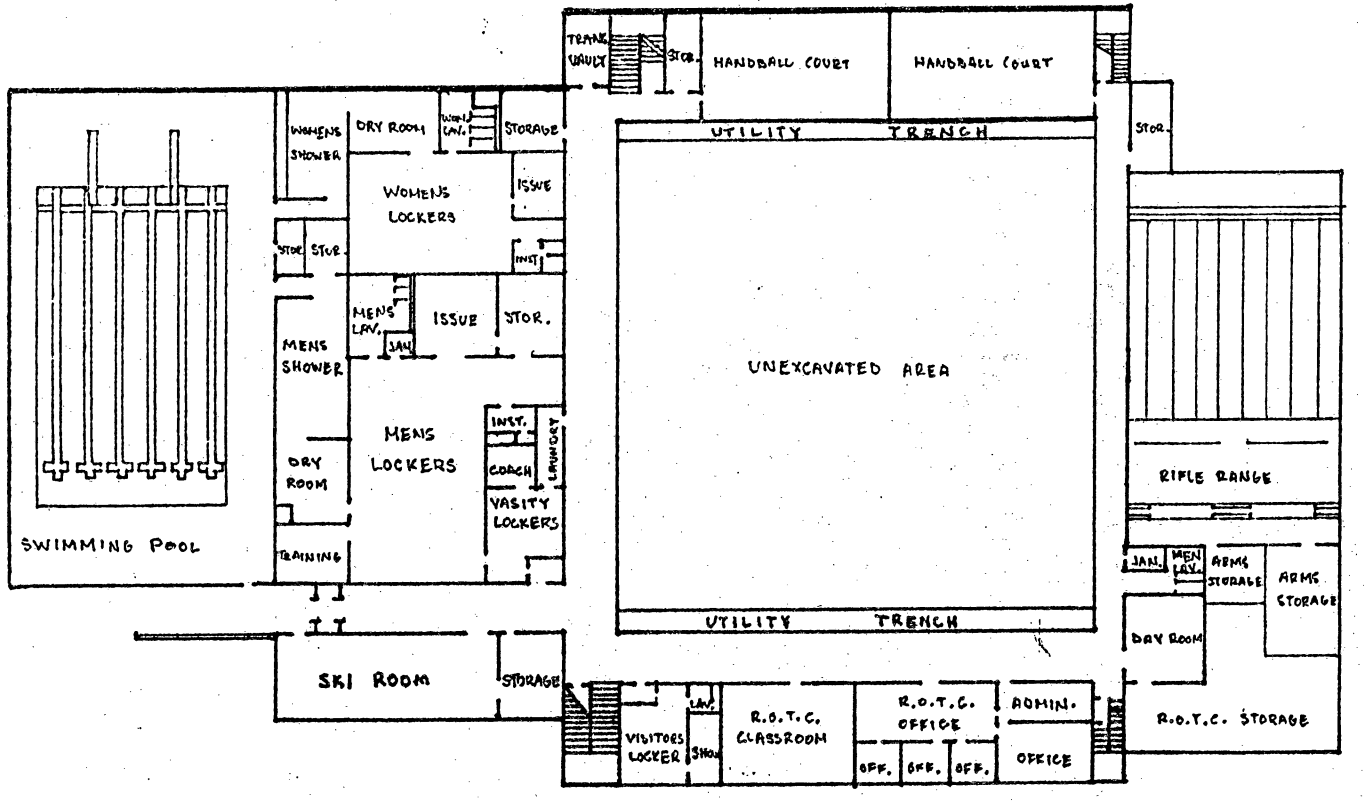
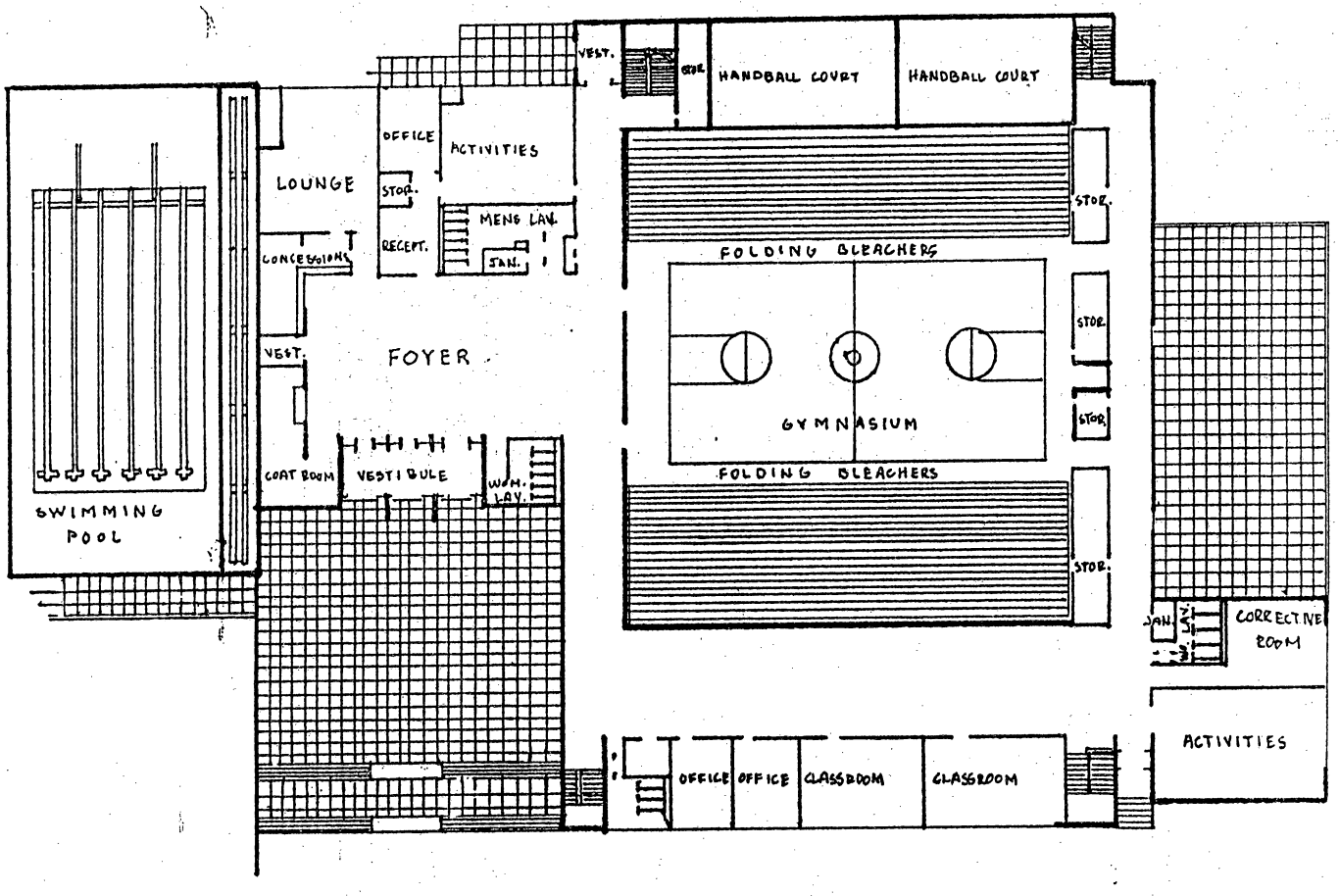
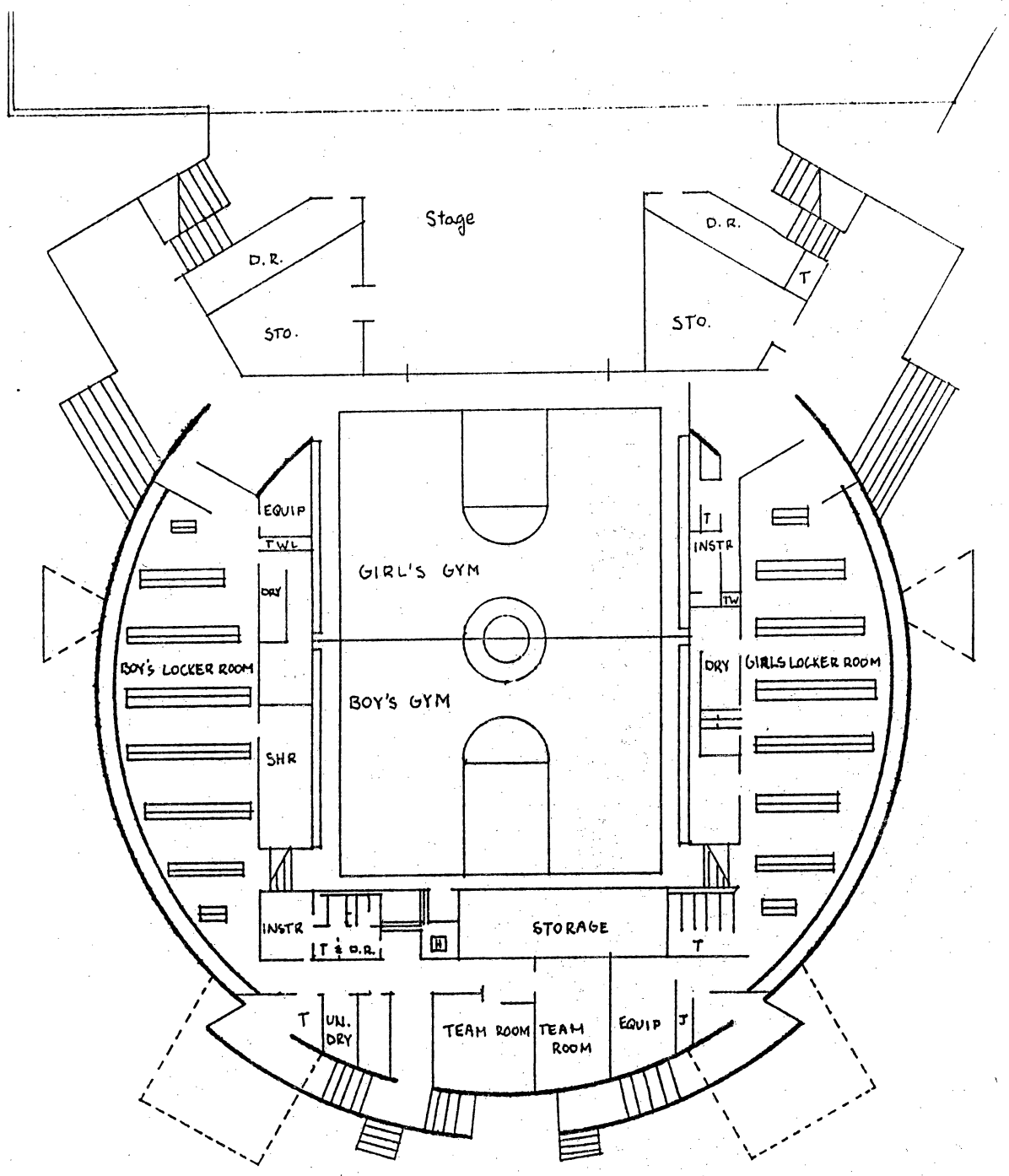


GROUND FLOOR PLAN



MAIN FLOOR PLAN



BASEMENT PLAN

CHECKLIST FOR FACILITY PLANNERS **EXHIBIT D**

General

		Yes	No
1.	A clear-cut statement has been prepared on the nature and scope of the program, and the special requirements for space, equipment, fixtures, and facilities dictated by the activities to be conducted.	___	___
2.	The facility has been planned to meet the total requirements of the program as well as the special needs of those who are to be served.	___	___
3.	The plans and specifications have been checked by all governmental agencies (city, county, and state) whose approval is required by law.	___	___
4.	Plans for areas and facilities conform to state and local regulations and to accepted standards and practices.	___	___
5.	The areas and facilities planned make possible the programs which serve the interests and needs of all the people.	___	___
6.	Every available source of property or funds has been explored, evaluated, and utilized whenever appropriate.	___	___
7.	All interested persons and organizations concerned with the facility have had an opportunity to share in its planning (professional educators, users, consultants, administrators, engineers, architects, program specialists, building managers, and builder -- a team approach).	___	___
8.	The facility and its appurtenances will fulfill the maximum demands of the program. The program has not been curtailed to fit the facility.	___	___
9.	The facility has been functionally planned to meet the present and anticipated needs of specific programs, situations, and publics.	___	___
10.	Future additions are included in present plans to permit economy of construction.	___	___
11.	Lecture classrooms are isolated from distracting noises.	___	___
12.	Storage areas for indoor and outdoor equipment are adequately sized. They are located adjacent to the gymnasia.	___	___
13.	Shelves in storage rooms are slanted toward the wall.	___	___
14.	All passageways are free of obstructions; fixtures are recessed.	___	___
15.	Facilities for health services, health testing, health instruction, and the first-aid and emergency-isolation rooms are suitably interrelated.	___	___
16.	Buildings, specific areas, and facilities are clearly identified.	___	___
17.	Locker rooms are arranged for ease of supervision.	___	___
18.	Offices, teaching stations, and service facilities are properly interrelated.	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

General - continued

		Yes	No
19.	Special needs of the physically handicapped are met, including a ramp into the building at a major entrance.	___	___
20.	All "dead space" is used.	___	___
21.	The building is compatible in design and comparable in quality and accommodation to other campus structures.	___	___
22.	Storage rooms are accessible to the play area.	___	___
23.	Workrooms, conference rooms, and staff and administrative offices are interrelated.	___	___
24.	Shower and dressing facilities are provided for professional staff members and are conveniently located.	___	___
25.	Thought and attention have been given to making facilities and equipment as durable and vandal-proof as possible.	___	___
26.	Low-cost maintenance features have been adequately considered.	___	___
27.	This facility is a part of a well-integrated master plan.	___	___
28.	All areas, courts, facilities, equipment, climate control, security, etc. conform rigidly to detailed standards and specifications.	___	___
29.	Shelves are recessed and mirrors are supplied in appropriate places in rest rooms and dressing rooms. Mirrors are not placed above lavatories.	___	___
30.	Dressing space between locker rows is adjusted to the size and age level of students.	___	___
31.	Drinking fountains are conveniently placed in locker-room areas or immediately adjacent thereto.	___	___
32.	Special attention is given to provision for the locking of service windows and counters, supply bins, carts, shelves, and racks.	___	___
33.	provision is made for the repair, maintenance, replacement, and off-season storage of equipment and uniforms.	___	___
34.	A well-defined program for laundering and cleaning of towels, uniforms, and equipment is included in the plan.	___	___
35.	Noncorrosive metal is used in dressing, drying, and shower areas except for enameled lockers.	___	___
36.	Anti-panic hardware is used where required by fire regulations.	___	___
37.	Properly placed hose bibbs and drains are sufficient in size and quantity to permit flushing the entire area with a water hose.	___	___
38.	A water-resistant, coved based is used under the locker base and floor mat, and where floor and wall join.	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

General - continued

		Yes	No
39.	Chalkboards and/or tackboards with map tracks are located in appropriate places in dressing rooms, hallways, and classrooms.	___	___
40.	Book shelves are provided in toilet areas.	___	___
41.	Space and equipment are planned in accordance with the types and number of enrollees.	___	___
42.	Basement rooms, being undesirable for dressing, drying, and showering, are not planned for those purposes.	___	___
43.	Spectator seating (permanent) in areas which are basically instructional is kept at a minimum. Roll-away bleachers are used primarily. Balcony seating is considered as a possibility .	___	___
44.	Well-lighted and effectively displayed trophy cases enhance the interest and beauty of the lobby.	___	___
45.	The space under the stairs is used for storage.	___	___
46.	Department heads' offices are located near the central administrative office, which includes a well-planned conference room.	___	___
47.	Workrooms are located near the central office and serve as a repository for departmental materials and records.	___	___
48.	The conference area includes a cloak room, lavatory, and toilet.	___	___
49.	In addition to regular secretarial offices established in the central and department chairman's offices, a special room to house a secretarial pool for staff members is provided.	___	___
50.	Staff dressing facilities are provided. These facilities may also serve game officials.	___	___
51.	The community and/or neighborhood has a "round table" -- planning round table.	___	___
52.	All those (persons and agencies) who should be a party to planning and development are invited and actively engaged in the planning process.	___	___
53.	Space and area relationships are important. They have been carefully considered.	___	___
54.	Both long-range plans and immediate plans have been made.	___	___
55.	The body comfort of the child, a major factor in securing maximum learning, has been considered in the plans.	___	___
56.	Plans for quiet areas have been made.	___	___
57.	In the planning, consideration has been given to the need for adequate recreation areas and facilities, both near and distant from the homes of people.	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

General - continued

		Yes	No
58.	Plans recognize the primary function of recreation as being enrichment of learning through creative self-expression, self-enhancement, and the achievement of self-potential	___	___
59.	Every effort has been exercised to eliminate hazards.	___	___
60.	The installation of low-hanging door closures, light fixtures, signs, and other objects in traffic areas has been avoided.	___	___
61.	Warning signals -- both visible and audible -- are included in the plans.	___	___
62.	Ramps have a slope equal to or greater than a 1-foot rise in 12 feet.	___	___
63.	Minimum landings for ramps are 5 feet x 5 feet, they extend at least 1 foot beyond the swinging arc of a door, have at least 6-foot clearance at the bottom, and have level platforms at 30-foot intervals on every turn.	___	___
64.	Adequate locker and dressing spaces are provided.	___	___
65.	The design of dressing, drying, and shower areas reduces foot traffic to a minimum and establishes clean, dry aisles for bare feet.	___	___
66.	Teaching stations are properly related to service facilities.	___	___
67.	Toilet facilities are adequate in number. They are located to serve all groups for which provisions are made.	___	___
68.	Mail services, outgoing and incoming, are included in the plans.	___	___
69.	Hallways, ramps, doorways, and elevators are designed to permit equipment to be moved easily and quickly.	___	___
70.	A keying design suited to administrative and instructional needs is planned.	___	___
71.	Toilets used by large groups have circulating (in and out) entrances and exits.	___	___

Climate Control

1.	Provision is made throughout the building for climate control -- heating, ventilating, and refrigerated cooling.	___	___
2.	Special ventilation is provided for locker, dressing, shower, drying, and toilet rooms.	___	___
3.	Heating plans permit both area and individual room control.	___	___
4.	Research areas where small animals are kept and where chemicals are used have been provided with special ventilating equipment.	___	___
5.	The heating and ventilating of the wrestling gymnasium have been given special attention.	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Electrical

		Yes	No
1.	Shielded, vapor-proof lights are used in moisture-prevalent areas.	___	___
2.	Lights in strategic areas are key controlled.	___	___
3.	Lighting intensity conforms to approved standards.	___	___
4.	An adequate number of electrical outlets are strategically placed.	___	___
5.	Gymnasium and auditorium lights are controlled by dimmer units.	___	___
6.	Locker room lights are mounted above the space between lockers.	___	___
7.	Natural light is controlled properly for purposes of visual aids and other avoidance of glare.	___	___
8.	Electrical outlet plates are installed 3 feet above the floor unless special use dictates other locations.	___	___
9.	Controls for light switches and projection equipment are suitably located and interrelated.	___	___
10.	All lights are shielded. Special protection is provided in gymnasia, court areas, and shower rooms.	___	___
11.	Lights are placed to shine between rows of lockers.	___	___

Walls

1.	Movable and folding partitions are power-operated and controlled by keyed switches.	___	___
2.	Wall plates are located where needed and are firmly attached.	___	___
3.	Hooks and rings for nets are placed (and recessed in walls) according to court locations and net heights.	___	___
4.	Materials that clean easily and are impervious to moisture are used where moisture is prevalent.	___	___
5.	Shower heads are placed at different heights -- 4 feet (elementary) to 7 feet (university) -- for each school level.	___	___
6.	Protective matting is placed permanently on the walls in the wrestling room, at the ends of basketball courts, and in other areas where such protection is needed.	___	___
7.	An adequate number of drinking fountains is provided. They are properly placed (recessed in wall).	___	___
8.	One wall (at least) of the dance studio has full-length mirrors.	___	___
9.	All corners in locker rooms are rounded.	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Ceilings

		Yes	No
1.	Overhead-supported apparatus is secured to beams engineered to withstand stress.	___	___
2.	The ceiling height is adequate for the activities to be housed.	___	___
3.	Acoustical materials impervious to moisture are used in moisture-prevalent areas.	___	___
4.	Skylights, being impractical, are seldom used because of problems in waterproofing roofs and the controlling of sun rays (gyms).	___	___
5.	All ceilings except those in storage areas are acoustically treated with sound-absorbent materials.	___	___

Floors

1.	Floor plates are placed where needed and are flush-mounted.	___	___
2.	Floor design and materials conform to recommended standards and specifications.	___	___
3.	Lines and markings are painted on floors before sealing is completed (when synthetic tape is not used).	___	___
4.	A coved base (around lockers and where wall and floor meet) of the same water-resistant material used on floors is found in all dressing and shower rooms.	___	___
5.	Abrasive, nonskid, slip-resistant flooring that is impervious to moisture is provided on all areas where water is used -- laundry, swimming pool, shower, dressing, and drying rooms.	___	___
6.	Floor drains are properly located and the slope of the floor is adequate for rapid drainage.	___	___

Gymnasia and Special Rooms

1.	Gymnasia are planned so as to provide for safety zones (between courts, end lines, and walls) and for best utilization of space.	___	___
2.	One gymnasium wall is free of obstructions and is finished with a smooth, hard surface for ball-rebounding activities.	___	___
3.	The elementary school gymnasium has one wall free of obstructions; a minimum ceiling height of 18 feet; a minimum of 4,000 square feet of teaching area, and a recessed area for housing a piano.	___	___
4.	Secondary school gymnasia have a minimum ceiling height of 22 feet; a scoreboard; electrical outlets placed to fit with bleacher installation; wall attachments for apparatus and nets; and a power-operated, sound-insulated, and movable partition with a small pass-through door at one end.	___	___
5.	A small spectator alcove adjoins the wrestling room and contains a drinking fountain (recessed in the wall).	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Gymnasia and Special Rooms - continued

		Yes	No
6.	Cabinets, storage closets, supply windows, and service areas have locks.	___	___
7.	Provisions have been made for the cleaning, storing, and issuing of physical education and athletic uniforms.	___	___
8.	Shower heads are placed at varying heights in the shower rooms on each school level.	___	___
9.	Equipment is provided for the use of the physically handicapped.	___	___
10.	Special provision has been made for audio and visual aids, including intercommunication systems, radio, and television.	___	___
11.	Team dressing rooms have provisions for:		
	a. Hosing down room	___	___
	b. Floors pitched to drain easily	___	___
	c. Hot and cold water hose bibbs	___	___
	d. Windows located above locker heights	___	___
	e. Chalk, tack, and bulletin boards, and movie projection	___	___
	f. Lockers for each team member	___	___
	g. Drying facility for uniforms	___	___
12.	The indoor rifle range includes:		
	a. Targets located 54 inches apart and 50 feet from the firing line	___	___
	b. 3 feet to 8 feet of space behind targets	___	___
	c. 12 feet of space behind firing line	___	___
	d. Ceilings 8 feet high	___	___
	e. Width adjusted to number of firing lines needed (1-line for each 3 students)	___	___
	f. A pulley device for target placement and return	___	___
	g. Storage and repair space	___	___
13.	Dance facilities include:		
	a. 100 square feet per student	___	___
	b. A minimum length of 60 linear feet for modern dance	___	___
	c. Full-height viewing mirrors on one wall (at least) of 30 feet; also, a 20 foot mirror on an additional wall, if possible	___	___
	d. Acoustical drapery to cover mirrors when not used and for protection if other activities are permitted	___	___
	e. Dispersed microphone jacks and speaker installation for music and instruction	___	___
	f. Built-in cabinets for record players, microphones, and amplifiers, with space for equipment carts	___	___
	g. Electrical outlets and microphone connections around perimeter of room	___	___
	h. An exercise bar (34 inches to 42 inches above floor) on one wall	___	___
	i. Drapes, surface colors, floors (maple preferred), and other room appointments to enhance the room's attractiveness	___	___
	j. Location near dressing rooms and outside entrances	___	___
14.	Training rooms include:		
	a. Rooms large enough to administer adequately proper health services	___	___
	b. Sanitary storage cabinets for medical supplies	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Gymnasia and Special Rooms - continued

	Yes	No
c. Installation of drains for whirlpool, tubs, etc.	___	___
d. Installation of electrical outlets with proper capacities and voltage	___	___
e. High stools for use of equipment such as whirlpool, ice tubs, etc.	___	___
f. Water closet, hand lavatory, and shower	___	___
g. Extra hand lavatory in the trainer's room proper	___	___
h. Adjoining dressing rooms	___	___
i. Installation and use of hydrotherapy and diathermy equipment in separate areas	___	___
j. Space for the trainer, the physician, and the various services of this function	___	___
k. Corrective-exercise laboratories located conveniently and adapted to the needs of the handicapped	___	___
15. Coaches' rooms should provide:		
a. A sufficient number of dressing lockers for coaching staff and officials	___	___
b. A security closet or cabinet for athletic equipment such as timing devices	___	___
c. A sufficient number of showers and toilet facilities	___	___
d. Drains and faucets for hosing down the rooms where this method of cleaning is desirable and possible	___	___
e. A small chalkboard and tackboard	___	___
f. A small movie screen and projection table for use of coaches to review films	___	___

Handicapped and Disabled

Have you included those considerations that would make the facility accessible to, and usable by, the disabled? These considerations include:

1. The knowledge that the disabled will be participants in almost all activities, not merely spectators, if the facility is properly planned.	___	___
2. Ground-level entrance(s) or stair-free entrance(s) using inclined walk(s) or inclined ramp(s).	___	___
3. Uninterrupted walk surface; no abrupt changes in levels leading to the facility.	___	___
4. Approach walks and connecting walks no less than 4 feet in width.	___	___
5. Walks with a gradient no greater than 5%.	___	___
6. A ramp, when used, with rise no greater than 1 foot in 12 feet.	___	___
7. Flat or level surface inside and outside of all exterior doors, extending 5 feet from the door in the direction that the door swings, and extending 1 foot to each side of the door.	___	___
8. Flush thresholds at all doors.	___	___
9. Appropriate door widths, heights, and mechanical features.	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Handicapped and Disabled - continued

		Yes	No
10.	At least 6 feet between vestibule doors in series, i.e., inside and outside doors.	___	___
11.	Access and proximity to parking areas.	___	___
12.	No obstructions by curbs at crosswalks, parking areas, etc.	___	___
13.	Proper precautions (handrails, etc.) at basement-window areaways, open stairways, porches, ledges, and platforms.	___	___
14.	Handrails on all steps and ramps.	___	___
15.	Precautions against the placement of manholes in principal or major sidewalks.	___	___
16.	Corridors that are at least 60 inches wide and without abrupt pillars or protrusions.	___	___
17.	Floors which are nonskid and have no abrupt changes or interruptions in level.	___	___
18.	Proper design of steps.	___	___
19.	Access to rest rooms, water coolers, telephones, food-service areas, lounges, dressing rooms, play areas, and all auxiliary services and areas.	___	___
20.	Elevators in multiple-story buildings.	___	___
21.	Appropriate placement of controls to permit and to prohibit use as desired.	___	___
22.	Sound signals for the blind, and visual signals for the deaf as counterparts to regular sound and sight signals.	___	___
23.	Proper placement, concealment, or insulation of radiators, heat pipes, hot water pipes, drain pipes, etc.	___	___

Swimming Pools

1.	Has a clear-cut statement been prepared on the nature and scope of the design program and the special requirements for space, equipment, and facilities dictated by the activities to be conducted?	___	___
2.	Has the swimming pool been planned to meet the total requirements of the program to be conducted as well as any special needs of the clientele to be served?	___	___
3.	Have all plans and specifications been checked and approved by the local board of health?	___	___
4.	Is the pool the proper depth to accommodate the various age groups and types of activities it is intended to serve?	___	___
5.	Does the design of the pool incorporate the most current knowledge and best experience available regarding swimming pools?	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Swimming Pools - continued

		Yes	No
6.	If a local architect or engineer who is inexperienced in pool construction is employed, has an experienced pool consultant architect, or engineer been called in to advise on design and equipment?	___	___
7.	Is there adequate deep water for diving (minimum of 9 feet for 1-meter boards, 12 feet for 3-meter boards, and 15 feet for 10-meter towers)?	___	___
8.	Have the requirements for competitive swimming been met (7-foot lanes; 12-inch black or brown lines on the bottom; pool 1 inch longer than official measurement; depth and distance markings?	___	___
9.	Is there adequate deck space around the pool? Has more space been provided than that indicated by the minimum recommended deck/pool ration?	___	___
10.	Does the swimming instructor's office face the pool? And is there a window through which the instructor may view all the pool area? Is there a toilet-shower-dressing area next to the office for instructor?	___	___
11.	Are recessed steps or removable ladders located on the walls so as not to interfere with competitive swimming turns?	___	___
12.	Does a properly constructed overflow gutter extend around the pool perimeter?	___	___
13.	Where skimmers are used, have they been properly located so that they are not on walls where competitive swimming is to be conducted?	___	___
14.	Have separate storage spaces been allocated for maintenance and instructional equipment?	___	___
15.	Has the area for spectators been properly separated from the pool area?	___	___
16.	Have all diving standards and lifeguard chairs been properly anchored?	___	___
17.	Does the pool layout provide the most efficient control of swimmers from showers and locker rooms to the pool? Are toilet facilities provided for wet swimmers separate from the dry area?	___	___
18.	Is the recirculation pump located below the water level?	___	___
19.	Is there easy vertical access to the filter room for both people and material (stairway if required)?	___	___
20.	Has the proper pitch to drains been allowed in the pool, on the pool deck, in the overflow gutter, and on the floor of shower and dressing rooms?	___	___
21.	Has adequate space been allowed between diving boards and between the diving boards and sidewalls?	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Swimming Pools - continued

		Yes	No
22.	Is there adequate provision for lifesaving equipment? Pool-cleaning equipment?	___	___
23.	Are inlets and outlets adequate in number and located so as to ensure effective circulation of water in the pool?	___	___
24.	Has consideration been given to underwater lights, underwater observation windows, and underwater speakers?	___	___
25.	Is there a coping around the edge of the pool?	___	___
26.	Has a pool heater been considered in northern climates in order to raise the temperature of the water?	___	___
27.	Have underwater lights in end racing walls been located deep enough and directly below surface lane anchors, and are they on a separate circuit?	___	___
28.	Has the plan been considered from the standpoint of handicapped persons (e.g., is there a gate adjacent to the turnstiles)?	___	___
29.	Is seating for swimmers provided on the deck?	___	___
30.	Has the recirculation-filtration system been designed to meet the anticipated future bathing load?	___	___
31.	Has the gas chlorinator (if used) been placed in a separate room accessible from and vented to the outside?	___	___
32.	Has the gutter waste water been valved to return to the filters, and also for direct waste?	___	___

Indoor Pools

1.	Is there proper mechanical ventilation?	___	___
2.	is there adequate acoustical treatment of walls and ceilings?	___	___
3.	Is there adequate overhead clearance for diving (15 feet above low springboards, 15 feet for 3-meter boards, and 10 feet for 10-meter platforms)?	___	___
4.	Is there adequate lighting (50 footcandles minimum)?	___	___
5.	Has reflection of light from the outside been kept to the minimum by proper location of windows or skylights (windows on side walls are not desirable)?	___	___
6.	Are all wall bases coved to facilitate cleaning?	___	___
7.	Is there provision for proper temperature control in the pool room for both water and air?	___	___
8.	Can the humidity of the pool room be controlled?	___	___
9.	Is the wall and ceiling insulation adequate to prevent "sweating"?	___	___
10.	Are all metal fittings of noncorrosive material?	___	___

CHECKLIST FOR FACILITY PLANNERS - continued

Indoor Pools - continued

		Yes	No
11.	Is there a tunnel around the outside of the pool, or a trench on the deck which permits ready access to pipes?	___	___

Outdoor Pools

1.	is the site for the pool in the best possible location (away from railroad tracks, heavy industry, trees, and open fields which are dusty)?	___	___
2.	Have sand and grass been kept the proper distance away from the pool to prevent them from being transmitted to the pool?	___	___
3.	Has a fence been placed around the pool to assure safety when not in use?	___	___
4.	Has proper subsurface drainage been provided?	___	___
5.	Is there adequate deck space for sunbathing?	___	___
6.	Are the outdoor lights placed far enough from the pool to prevent insects from dropping into the pool?	___	___
7.	Is the deck of nonslip material?	___	___
8.	Is there an area set aside for eating, separated from the pool deck?	___	___
9.	Is the bathhouse properly located, with the entrance to the pool leading to the shallow end?	___	___
10.	If the pool shell contains a concrete finish, has the length of the pool been increased by 3 inches over the "official" size in order to permit eventual tiling of the basin without making the pool "too short"?	___	___
11.	Are there other recreational facilities nearby for the convenience and enjoyment of swimmers?	___	___
12.	Do diving boards or platforms face north or east?	___	___
13.	Are lifeguard stands provided and properly located?	___	___
14.	Has adequate parking space been provided and properly located?	___	___
15.	Is the pool oriented correctly in relation to the sun?	___	___
16.	Have windshields been provided in situations where heavy winds prevail?	___	___